

Population and Migration Statistics Committee (Scotland)
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Migration estimate adjustment using HESA data

1. Background and overview of ONS student adjustment method

- 1.1 It is generally acknowledged that the current population estimates process does not track the migration of students effectively. The main reason for this is that the internal migration estimates rely on people re-registering with a GP when they move, something that many students fail to do when they move to start their studies. To address this issue, the Office for National Statistics (ONS) have made use of the administrative database held by the Higher Education Statistics Agency (HESA) to create an adjustment to internal (within England and Wales) migration estimates.
- 1.2 The method uses student domicile (parental address) and term-time address to create student migration flows from one Local Authority (LA) to another. These flows are then compared to the flows derived from the GP registration system. Where the HESA-derived flows are greater, the true number of moves are assumed to be at least equal to that recorded in the HESA data. Further detail on the ONS method can be found on the ONS website.
- 1.3 This paper reports on the investigations into the implementation of the ONS method in Scotland. For the purposes of this work, aggregate data was used. Gaining access to record level data in the future should help improve the robustness of the adjustment.

2. Start of study moves adjustment

- 2.1 The basic principle of the ONS method for the student adjustment for start of study moves is to compare the number moves between LA by single year of age and sex recorded in the HESA data with the equivalent count from the patient register (NHSCR/CHI) data. For the purposes of this study, only moves by those aged between 16 and 25 were considered.
- 2.2 Overall the greatest disparity between HESA and NHSCR/CHI moves is at age 18 and 19 and affects both sexes. There is an excess of HESA moves into City of Edinburgh, Aberdeen City, Stirling, Highland, Dundee City and Glasgow City. The excess of HESA moves out of an area were less concentrated in specific Local Authorities but the largest excesses were observed for City of Edinburgh, Fife and Glasgow City. When the excess of HESA moves in and out are combined, City of Edinburgh, Aberdeen City, Stirling and Dundee City all have a net gain recorded by HESA, while Fife, Dumfries and Galloway and Aberdeenshire all have a net loss recorded by HESA.
- 2.3 The disparity between HESA and NHSCR/CHI moves described above does not represent the full student adjustment. In the full adjustment, start of study moves, end of study moves and an adjustment for the double-counting of students who do eventually change their GP-registration must all be taken into account.

- 2.4 The HESA data we have access to does not include any information on students at non-Scottish institutions, so no equivalent figure for people going from Scotland to the rest of UK can be calculated.

3. End of Study moves adjustment – summary of ONS method

- 3.1 The approach taken to adjust for end of study moves is different to that taken for start of study moves as there is no equivalent to the HESA data with address following completion of studies. In the ONS method, calculating the number of former students to be removed from each Local Authority involves estimating:

- a. the number of people who end their studies each year,
- b. the number of these former students who move to a different local area after their studies,
- c. the number of these former students moving who don't re-register with a GP.

The final part of the ONS method involves estimating:

- d. the destination Local Authority of the 'removed' former students .

- 3.2 It is relatively straightforward to obtain (a) from HESA data. To obtain (b), ONS use 'address twelve months ago' data from the census and identify former students on the assumption that individuals holding a BSc or BA at age 22 or an MSc or MA at 23 must have been a student one year previously. An assumption is also made that the pattern of moves away from Local Authorities by former students has not changed since the census in 2001. Element (c) is obtained by comparing the number of moves from each Local Authority in the patient registers (the England and Wales equivalent of the Community Health Index (CHI)) between mid-2000 and mid-2001 to the number in the 2001 Census. This then allows the rate at which moves were not identified on the patient registers to be calculated. The assumption made for element (b) that movement patterns have not changed since the last census also applies here. The additional assumption that former students have the same re-registration rate as the general population (of similar age) must also be made as students cannot be separately identified on the patient registers.

- 3.3 The estimation of (d) uses the same principle as for (b), in that moves from one Local Authority to another are identified using the 'address twelve months ago' question in the 2001 census for respondents who held a BSc or BA at age 22 or an MSc or MA at 23. In addition to the assumptions mentioned for (b), it is also necessary to assume that students failing to complete their studies have the same pattern of moves as those that graduate.

4. End of Study moves adjustment – application in Scotland

- 4.1 The higher education system in Scotland, and therefore the pattern of student moves to and from university, is different to that in England and Wales. There are two specific differences that impact on the effective application of the ONS method in Scotland.

- 4.2 First, it is not clear how individuals with a BSc/BA can be differentiated from those with MSc/MA, as information on the level of degree held was not collected in the census in Scotland (or England and Wales?). Furthermore, defining the minimum ages at which BSc/BA and MSc/MA qualifications can be attained is more complex in Scotland than in England and Wales. In Scotland, about a quarter as many people start their studies at age 17 compared to age 18, the minimum starting age assumed in the ONS method. BSc/BA Degree courses in Scotland can last for 3 years (ordinary degree) or 4 years (Honours), these degrees were not distinguished in the 2001 census. A further complication is that it is possible for students to gain direct entry into second year, meaning courses may last 2 and 3 years. For Scottish migration it is also important to take into account that the census data will include students that studied in England and Wales (or overseas) and then moved to Scotland. Consequently, if all these factors are taken into account to create a true minimum age for attainment of BSc/BA and MSc/MA qualifications then only a very narrow subset of former students will be identified. It may not be appropriate to apply the post-study movement patterns of this narrow subset to all former students.
- 4.3 The second difference relates to the treatment of overseas students. The current ONS method is designed to create an adjustment to internal (within UK) migration only. Therefore, overseas domiciled students are excluded from the estimation of the calculation of the number of students ending their studies (element (a)). This is because it is assumed that most overseas students return to their country of domicile at the end of their studies and that the number of those that don't is matched by the number of UK domiciled students that go overseas at the end of their studies. Overseas students form a large proportion, nearly 25% (24,058), of first year students in Scotland, so the assumption that the number remaining in Scotland at the end of their studies is equal to the number of UK domiciled students going overseas may not be valid
- 4.4 A further issue affecting the implementation of the ONS method in Scotland is the use of patient register data from 2000/01 in comparison with the 2001 census data to identify former students that moved on completion of their studies but did not re-register with a GP (element (c)). This is problematic in Scotland as the CHI (the equivalent NHS-based source of moves at Local Authority level) was not used for population estimates until mid-2002. Even if this data could be obtained, it would be necessary to virtually re-create a mid-2001 population estimate using the current internal migration method to create a comparable dataset.

5. Back series and counter adjustment

- 5.1 ONS have decided to produce an adjustment to the internal migration estimates back to mid-2002. There are two problems associated with this: a lack of HESA term-time address data and the risk of double counting those who re-register after being adjusted for.
- 5.2 The lack of term-time address data is tackled by assuming that the distribution between university campus (for which data is available) and student's term-time address is the same. There are a number of Scottish universities that lie on or close to Local Authority boundaries, so campus changes such as new

halls of residence or moves to new locations could have a big impact on the relationship between students' campuses and term-time addresses.

- 5.3 To reduce the risk of double-counting moves, ONS assume that a proportion of those initially adjusted do change their GP registration. This seems a very important aspect of the adjustment but there is little evidence on which to base the appropriate re-adjustment level. Certainly for end of studies moves, it is likely that most former students will, at some point, re-register with a GP. A considerable effort would be required to individually analyse the student adjustment for each Local Authority so that a reasonable double-counting adjustment can be devised. Access to record level HESA data and linkage to NHSCR should mean that re-registrations can be tracked, thereby removing or greatly reducing the guesswork involved.

6. Overall assessment and conclusion

- 6.1 The method devised by ONS to adjust for moves of students at the start and end of studies involves a number of assumptions that impact on the accuracy of the adjustment. Implementing this method in Scotland would require additional assumptions to be made, particularly for the end of studies moves adjustment. A significant piece of data – CHI moves from 2000/01 – is unavailable. A viable alternative would have to be found for the adjustment for end of studies moves to be made.
- 6.2 The data described above for the start of studies adjustment indicates that the adjustment using this method would be relatively small. If individual record data were linked to NHSCR data the accuracy of the adjustment could be improved greatly. However, unless individual record data were available retrospectively, there would still be problems in implementing a back series adjustment. This would leave open the possibility for double counting of moves to affect the accuracy of population estimates. As the population estimates will be re-based following the 2011 census, this seems the most appropriate time to implement a student adjustment, if one was considered necessary.
- 6.3 It is therefore recommended that no adjustment for student migration is made to the mid-year population estimates for Scotland until individual record data becomes available. The impact of the assumptions on the accuracy of the adjustment, the lack of key data and the likely small size of the adjustment mean that any adjustment using the currently available data would result in little or no improvement to the current mid-year population estimate methodology.
- 6.4 PAMS are asked to endorse this recommendation. Comments should be sent by 25 June 2010.
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